

WE CLAIM:

1. A system for performing a medical procedure, comprising:  
5 a sensor to sense a state of a cardiac tissue; and  
an indicator to indicate the state of the cardiac tissue.
2. The system of claim 1 further comprising:  
a cardiac stimulator in communication with the sensor to stimulate  
10 beating of a heart when the state indicated by the indicator is a contracting state.
3. The system of claim 1 further comprising:  
a nerve stimulator in communication with the sensor to inhibit  
beating of a heart when the state indicated by the indicator is a non-contracting  
15 state.
4. The system of claim 1 further comprising:  
drug delivery means for delivering at least one drug during the  
medical procedure.  
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5. The system of claim 4 wherein the drug delivery means is selected  
from the group consisting of:  
a spray, a cream, an ointment, a medicament, a pill, a patch, a  
catheter, a cannula, a needle and syringe, a pump, and an iontophoretic drug  
25 delivery device.

6. The system of claim 4 wherein the drug is selected from the group consisting of:

a beta-blocker, a cholinergic agent, a cholinesterase inhibitor, a  
5 calcium channel blocker, a sodium channel blocker, a potassium channel agent, adenosine, an adenosine receptor agonist, an adenosine deaminase inhibitor, dipyridamole, a monoamine oxidase inhibitor, digoxin, digitalis, lignocaine, a bradykinin agent, a serotonergic agonist, an antiarrhythmic agent, a cardiac glycoside, a local anesthetic, atropine, a calcium solution, an agent that  
10 promotes heart rate, an agent that promotes heart contractions, dopamine, a catecholamine, an inotrope glucagon, a hormone, forskolin, epinephrine, norepinephrine, thyroid hormone, a phosphodiesterase inhibitor, prostacyclin, prostaglandin and a methylxanthine.

15 7. The system of claim 4 wherein the drug is naturally occurring.

8. The system of claim 4 wherein the drug is chemically synthesized.

9. The system of claim 3 wherein the nerve stimulator stimulates a  
20 nerve selected from the group consisting of:

a vagal nerve, a carotid sinus nerve, a fat pad.

10. The system of claim 3 wherein the nerve stimulator stops  
stimulation automatically when the state indicated by the indicator is a  
25 contracting state.

11. The system of claim 1 wherein the sensor is selected from the group consisting of:

an electrical sensor, a chemical sensor, an electromagnetic  
5 interference sensor, an electrochemical sensor, a pressure sensor, a sound wave sensor, a magnetic sensor, an ultraviolet sensor, a visible light sensor, an infrared sensor, a radiation sensor, a flow sensor, a temperature sensor, a gas sensor, an optical sensor, a pH sensor, a potentiometric sensor, a fluorescence sensor, a depolarization sensor and a biosensor.

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12. The system of claim 1 wherein the sensor comprises at least one electrode.

13. The system of claim 12 wherein the electrode is selected from the  
15 group consisting of:

cardiac stimulation electrodes, clip electrodes, needle electrodes, probe electrodes, pacing electrodes, epicardial electrodes, patch electrodes, intravascular electrodes, balloon-type electrodes, basket-type electrodes, tape-type electrodes, umbrella-type electrodes, suction-type electrodes,  
20 endotracheal electrodes, endoesophageal electrodes, transcutaneous electrodes, intracutaneous electrodes, screw-type electrodes, barb-type electrodes, bipolar electrodes, monopolar electrodes, metal electrodes, wire electrodes and cuff electrodes.

25 14. The system of claim 2 wherein the cardiac stimulator comprises at least one electrode.

15. The system of claim 14 wherein the electrode is selected from the group consisting of:

cardiac stimulation electrodes, clip electrodes, needle electrodes,  
5 probe electrodes, pacing electrodes, epicardial electrodes, patch electrodes,  
intravascular electrodes, balloon-type electrodes, basket-type electrodes,  
tape-type electrodes, umbrella-type electrodes, suction-type electrodes,  
endotracheal electrodes, endoesophageal electrodes, transcutaneous  
electrodes, intracutaneous electrodes, screw-type electrodes, barb-type  
10 electrodes, bipolar electrodes, monopolar electrodes, metal electrodes, wire  
electrodes and cuff electrodes.

16. The system of claim 2 wherein the sensor and the cardiac  
stimulator are the same.

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17. The system of claim 3 wherein the nerve stimulator comprises at  
least one electrode.

18. The system of claim 17 wherein the electrode is selected from the  
20 group consisting of:

nerve stimulation electrodes, endotracheal electrodes,  
endoesophageal electrodes, intravascular electrodes, transcutaneous electrodes,  
intracutaneous electrodes, balloon-type electrodes, basket-type electrodes,  
umbrella-type electrodes, tape-type electrodes, suction-type electrodes,  
25 screw-type electrodes, barb-type electrodes, bipolar electrodes, monopolar  
electrodes, metal electrodes, wire electrodes, patch electrodes, cuff electrodes,  
clip electrodes, needle electrodes and probe electrodes.

19. The system of claim 1 further comprising a breathing regulator.

20. The system of claim 19 wherein the breathing regulator stimulates  
5 a phrenic nerve.

21. The system of claim 19 wherein the breathing regulator controls a  
respirator.

10 22. The system of claim 19 wherein the breathing regulator comprises  
at least one electrode.

23. The system of claim 22 wherein the electrode is selected from the  
group consisting of:

15 nerve stimulation electrodes, endotracheal electrodes,  
endoesophageal electrodes, intravascular electrodes, transcutaneous electrodes,  
intracutaneous electrodes, balloon-type electrodes, basket-type electrodes,  
umbrella-type electrodes, suction-type electrodes, screw-type electrodes,  
tape-type electrodes, barb-type electrodes, bipolar electrodes, monopolar  
20 electrodes, metal electrodes, wire electrodes, patch electrodes, cuff electrodes,  
clip electrodes, needle electrodes and probe electrodes.

24. The system of claim 1 wherein the medical procedure is selected from the group consisting of:

5 a surgical procedure, a non-surgical procedure, a fluoroscopic procedure, a cardiac procedure, a vascular procedure, a neurosurgical procedure, an electrophysiology procedure, a diagnostic procedure, a therapeutic procedure, an ablation procedure, an endovascular procedure, a liver procedure, a spleen procedure, a pulmonary procedure, an aneurysm repair, an imaging procedure, a CAT scan procedure, a MRI procedure, a pharmacological therapy, 10 a drug delivery procedure, a biological delivery procedure, a genetic therapy, a cellular therapy, a cancer therapy, a radiation therapy, a transplantation procedure, a coronary angioplasty procedure, a stent delivery procedure, an atherectomy procedure, a procedure that requires precise control of cardiac motion, a procedure that requires precise control of bleeding, a non-invasive 15 procedure, a minimally invasive procedure, an invasive procedure, a port-access procedure, an endoscopic procedure, a sternotomy procedure, a thoracotomy procedure and a robotic procedure.

25. A method for performing a medical procedure, comprising:  
20 inhibiting beating of a heart;  
performing the medical procedure; and  
sensing a state of cardiac tissue while beating of the heart is inhibited.

25 26. The method of claim 25, further comprising:  
inhibiting beating of the heart automatically when the state of cardiac tissue is a non-contracting state.

27. The method of claim 25 further comprising:  
stimulating a nerve to inhibit beating of the heart when the state of  
cardiac tissue is a non-contracting state.

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28. The method of claim 27 further comprising:  
stopping stimulation of the nerve when the state of cardiac  
contraction is a contracting state.

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29. The method of claim 25, further comprising:  
allowing beating of the heart to occur when the state of cardiac  
tissue is a contracting state.

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30. The method of claim 25, further comprising:  
stimulating beating of the heart automatically when the state of  
cardiac tissue is a contracting state.

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31. The method of claim 25 further comprising:  
delivering at least one drug during the medical procedure.

32. The method of claim 25 further comprising:  
stopping breathing when the state of cardiac tissue is a non-  
contracting state.

33. A device for performing a medical procedure, comprising:  
a processor;  
a sensor to sense a state of cardiac tissue, the sensor operatively  
5 connected to the processor; and  
at least one nerve stimulation electrode, the nerve stimulation  
electrode operatively connected to the processor wherein the processor receives  
a signal from the sensor and adjusts output from the nerve stimulation electrode  
in response to the signal.

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34. The device of claim 33 wherein the sensor is selected from the  
group consisting of:

an electrical sensor, a chemical sensor, an electromagnetic  
interference sensor, an electrochemical sensor, a pressure sensor, a sound  
15 wave sensor, a magnetic sensor, an ultraviolet sensor, a visible light sensor, an  
infrared sensor, a radiation sensor, a flow sensor, a temperature sensor, a gas  
sensor, an optical sensor, a pH sensor, a potentiometric sensor, a fluorescence  
sensor, a depolarization sensor and a biosensor.

20 35. The device of claim 33 wherein the nerve stimulation electrode  
selected from the group consisting of:

endotracheal electrodes, endoesophageal electrodes, intravascular  
electrodes, transcutaneous electrodes, intracutaneous electrodes, balloon-type  
electrodes, basket-type electrodes, umbrella-type electrodes, tape-type  
25 electrodes, suction-type electrodes, screw-type electrodes, barb-type electrodes,  
bipolar electrodes, monopolar electrodes, metal electrodes, wire electrodes,  
patch electrodes, cuff electrodes, clip electrodes, needle electrodes and probe  
electrodes.



36. The device of claim 33 further comprising:  
at least one cardiac stimulation electrode to stimulate beating of the heart, the cardiac stimulator operatively connected to the processor wherein the  
5 processor receives a signal from the sensor and adjusts output from the cardiac stimulation electrode in response to the signal.

37. The device of claim 36 wherein the cardiac stimulation electrode is selected from the group consisting of:  
10 clip electrodes, needle electrodes, probe electrodes, pacing electrodes, epicardial electrodes, patch electrodes, intravascular electrodes, balloon-type electrodes, basket-type electrodes, tape-type electrodes, umbrella-type electrodes, suction-type electrodes, endotracheal electrodes, endoesophageal electrodes, transcutaneous electrodes, intracutaneous  
15 electrodes, screw-type electrodes, barb-type electrodes, bipolar electrodes, monopolar electrodes, metal electrodes, wire electrodes and cuff electrodes.

38. The device of claim 36 wherein the cardiac stimulation electrode and the sensor are the same.

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38. The device of claim 33 further comprising:  
at least one breathing regulation electrode for controlling breathing, the breathing regulation electrode operatively connected to the processor wherein the processor adjusts the output from the breathing regulation electrode  
25 in response to the signal.

39. The device of claim 38 wherein the breathing regulation electrode is selected from the group consisting of:

nerve stimulation electrodes, endotracheal electrodes,  
5 endoesophageal electrodes, intravascular electrodes, transcutaneous electrodes, intracutaneous electrodes, balloon-type electrodes, basket-type electrodes, umbrella-type electrodes, suction-type electrodes, screw-type electrodes, tape-type electrodes, barb-type electrodes, bipolar electrodes, monopolar electrodes, metal electrodes, wire electrodes, patch electrodes, cuff electrodes,  
10 clip electrodes, needle electrodes and probe electrodes.

40. The device of claim 33 further comprising:

a drug pump for delivering at least one drug, the drug pump  
operatively connected to the processor wherein the processor adjusts the output  
15 of the drug.